CLAIM AMENDMENTS:

Claim 1 (Currently Amended): A flat bed scanner ~~with a reference pattern for merging images~~, comprising:

a scan area for ~~positing~~ positioning a document to be scanned;

a carriage for scanning the document to obtain a plurality of partial images before and after the carriage stops; and

a reference pattern positioned at one side of the scan area, wherein, by using the carriage to detect the reference pattern, the partial images can be merged precisely to form a whole image.

Claim 2 (Currently Amended): The flat bed scanner as claimed in claim 1, wherein the reference pattern comprises:

a plurality of graphs in ~~an~~ a one-to-one mapping function; and

a straight line segment parallel to said one side of the scan area, wherein any one scan line intersects the straight line segment at one and only one point, and any one scan line intersects one of the graphs ~~in an one-to-one mapping function~~ at one and only one point.

Claim 3 (Currently Amended): The flat bed scanner as claimed in claim 2, wherein the graphs in ~~a~~ the one-to-one mapping function are a plurality of oblique line segments.

Claim 4 (Original): The flat bed scanner as claimed in claim 3, wherein the oblique line segments have equal slope.

Claim 5 (Currently Amended): An Automatic Document ~~Feed~~ Feeder (ADF) scanner ~~with a reference pattern for merging images~~, comprising:

a carriage;

a reference roller located at an area detectable by the carriage, wherein a document to be scanned rolls along with the rolling of the reference roller; and

a reference pattern rolled up and attached at one end of the reference roller so that the reference pattern rolls along with the reference roller, wherein the carriage scans the document to obtain a plurality of partial images before and after the reference roller stops, and by using the carriage to detect the reference pattern, the partial images can be merged precisely to form a whole image.

Claim 6 (Currently Amended): The ADF scanner as claimed in claim 5, wherein the reference pattern comprises:

a plurality of graphs in ~~an~~ a one-to-one mapping function; and

a straight line segment, wherein any one scan line intersects the straight line segment at one and only one point, and any one scan line intersects one of the graphs ~~in an one-to-one mapping function~~ at one and only one point.

Claim 7 (Currently Amended): The ADF scanner as claimed in claim 6, wherein the graphs in a-the one-to-one mapping function are a plurality of oblique line segments.

Claim 8 (Original): The ADF scanner as claimed in claim 7, wherein the oblique line segments have equal slope.

Claim 9 (Currently Amended): A method of merging a plurality of partial images to form a whole image in a flat bed scanner, wherein the scanner comprises a carriage, a scan area and a reference pattern located at one side of the scan area, and the carriage scans a document to obtain the plurality of partial images before and after the carriage stops, wherein the method comprises:

(a) detecting two intersect points of an image merging scan line and the reference pattern and determining the distance therebetween, wherein the distance between said two intersect points is defined as a first interval and a scan line where the carriage posits positions, while a memory of the scanner is inadequate, is defined as the image merging scan line;

(b) slowing down and moving the carriage in a first direction and stopping at a scan line defined as a first stopping scan line;

(c) moving the carriage in a second direction opposite to the first direction, starting from the first stopping scan line, passing the image merging scan line, slowing down and to a stop at a second stopping scan line;

(d) moving the carriage in the first direction from the second stopping scan line, wherein a stable scan line is where the carriage starts to move stably;

(e) detecting two intersect points of the stable scan line and the reference pattern and determining the distance therebetween, wherein the distance between said two intersect points is defined as a second interval, and determining a migration distance by the first interval and the second interval, using a logic operation; and

(f) moving the carriage from the stable scan line along the first direction and continuing scanning after the carriage reaches the image merging scan line.

Claim 10 (Currently Amended): The method of merging images as claimed in claim 9, wherein the reference pattern comprises:

a plurality of graphs in an a one-to-one mapping function; and

a straight line segment parallel to one side of the scan area, wherein any one scan line intersects the straight line segment at one and only one point, and any one scan line intersects one of the graphs in an the one-to-one mapping function at one and only one point.

Claim 11 (Currently Amended): The method of merging images as claimed in claim 10, wherein the graphs in a the one-to-one mapping function are a plurality of oblique line segments.

Claim 12 (Original): The method of merging images as claimed in claim 11, wherein the oblique line segments have equal slope.